



JSC is primed to share its cutting-edge technologies with industry next week. Story on Page 3.



JSC employees take on new responsibilities and accept honors for jobs well done. Story on Page 4.

Space News Roundup

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Mars probe takes breath for weather

Strong upper-level winds forced mission managers to postpone the launch of NASA's Mars Global Surveyor just 1 minute and 6 seconds before the planned liftoff Wednesday.

The countdown and launch from Kennedy Space Center aboard a McDonnell Douglas Delta II rocket went smoothly, and the launch team quickly began recycling systems for two Thursday launch opportunities. The first opportunity was at 11 a.m. and the second at 12:05 p.m. CST Thursday.

The Wednesday scrub came after the last weather balloon sent back its data. Thunderstorms in the area of the launch pad had forced controllers to pass up the first launch opportunity at 11:11 a.m.

A Nov. 7 launch would put the probe on track for arrival at Mars in September 1997 on a scouting mission that could lead the way for a sample return mission early in the next century.

Surveyor will spend four months dipping lower and lower into Mars' upper atmosphere, using a technique called aerobraking, to smooth its highly elliptical orbit into a low-altitude, nearly circular mapping orbit.

By March 1998, Surveyor will be orbiting Mars from pole-to-pole every two hours, using six instruments to systematically compile a database of information and images that will paint the clearest picture yet of the planet's atmosphere, surface and interior. The survey will continue for a full Martian year—the equivalent of two Earth years—amassing global maps of surface topography and weather conditions, and an inventory

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The STS-80 crew takes a break during the Terminal Countdown Test at Kennedy Space Center. From left are Mission Specialist Story Musgrave, Tom Jones, Commander Ken Cockrell, Mission Specialist Tammy Jernigan and Pilot Ken Rominger. The crew is scheduled to reenter its preflight quarantine period today, then fly back to KSC on Monday for final launch preparations, pending the Monday decision on a target launch date by NASA's Mission Management Team.

Shuttle managers to review launch status Monday

By James Hartsfield

Shuttle managers Monday changed the target date for *Columbia's* launch on STS-80 to no earlier than Nov. 15, providing additional time to complete an analysis and evaluation of nozzle erosion found on one solid rocket used by *Atlantis* in September.

Managers plan to reconvene a Flight Readiness Review panel early next week to hear the findings from the STS-79 solid rocket motor analysis.

"Everyone involved with the investigation of this issue has been doing a superb job and it appears the effort is nearing a point where it will provide us with a good understanding of the phenomenon," Space Shuttle Program Manager Tommy Holloway said.

"However, this additional week will ensure the final portions of the investigation are not rushed, and it will allow those involved to organize and present their data in the best way possible as they draw their conclusion."

Although the erosion of nozzle insulation was not severe enough to have posed any danger to *Atlantis' September* flight, managers have studied the problem because it is a higher amount of erosion than has been seen before.

For a Nov. 15 launch Commander Ken Cockrell, Pilot Kent Rominger and Mission Specialist Tammy

Jernigan, Tom Jones and Story Musgrave would fly to Kennedy Space Center late Monday. The launch countdown would begin on Tuesday. The Monday launch window opens at 1:28 p.m. CST, and landing would be on Dec. 1.

At Launch Pad 39B this week, technicians closed *Columbia's* payload bay doors following the successful completion of payload testing; checked the space suits that will be used by Jones and Jernigan during two space walks; and began engine closeouts.

Meanwhile, work continued in KSC's Bay 3 shuttle processing hangar to ready *Atlantis* for a January 1997 launch on STS-81, the fifth shuttle-Mir docking mission. This week, the orbiter docking system was stowed and

the three main engines were installed. The STS-81 crew, Commander Mike Baker, Pilot Brent Jett and Mission Specialist John Grunsfeld, Marsha Ivins, Jeff Wisoff and Jerry Linenger, will travel to KSC this weekend to inspect *Atlantis' payload bay* and crew equipment.

In the Bay 2 shuttle hangar, *Discovery* is being prepared for the second Hubble Space Telescope servicing mission. Work this week included servicing of the landing gear, brakes and wheels; checks of the aerosurfaces and hydraulic systems; and outfitting of the payload bay.



Mir crew working to understand space station environment

By Natasha Calder

The mission of the current American on board the Russian Mir Space Station is in its seventh week, with Cosmonaut Researcher John Blaha and his crew mates furthering an agenda of scientific research and studying the structural dynamics of Mir.

The Mir 22 crew—Blaha, Commander Valery Korzun and Flight Engineer Alexander Kaleri—has been spending time trying to find out more about the space station on which they now live as part of the Mir Structural Dynamics Experiment. Understanding large, complex space structures such as Mir will contribute to successful operation of the International Space Station, due for its first element launch in a little over one year.

Other recent experiments being conducted

on the station include daily checks and maintenance on the apparatus that houses the Cartilage In Space experiment, which is an investigation into the growth and maintenance of mature cartilage cells, additional analysis of the dwarf wheat plants in the Greenhouse Experiment, investigating the effects of space flight on the life cycle of plants to provide data for designing advanced life support systems for future space stations, also was sent down to Earth. During an interview, Blaha discussed many of the experiments being conducted on Mir and gave an enthusiastic appraisal of his first six weeks on orbit.

"The mission is going great... We're busy

about 16 hours a day, to tell you the truth, but I'm loving every second of it. It's kind of hard for me to realize that about six weeks has gone by since I left the planet. It feels like about four or five days," Blaha said. "We've got a lot of scientific experiments we're doing, we're growing wheat, we're growing cartilage in a bioreactor, we're growing a lot of crystals, we're doing a lot of acceleration measurements, measurements of the environment of this space station and of the structural design of it. Those kinds of things can help us build our better space station."

Blaha said there are only three things he's really missed during his time on orbit: his wife,

watching Dallas Cowboys football games and seeing the New York Yankees win the World series. But he said spending an extended period in space has its pluses, including learning the advantages of a space station mission over a space shuttle mission.

"I used to think there wouldn't be much difference, but after being in space for about two weeks you get into a routine. It's more like living on the planet, whereas on a space shuttle mission we're in a big rush to get things done because we're only there for a couple of weeks," Blaha said. "Here you have more time, and there's time to relax on the weekends. I've noticed that the longer I stay here, the better adapted I am and the more efficient I become at any of the work I'm trying to do."

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On-site blood drive sets third consecutive donation record

Once again, JSC civil servants and contractor personnel came together to help their community, setting a third consecutive record for total blood donations.

During the JSC On-site Blood Drive, held in conjunction with Safety and Total Health Day, St. Luke's collected 506 donations, including whole blood and platelet donations.

St. Luke's and the program coordinators offered their thanks to all of those who helped set up the drive and who donated. The donations will provide a great benefit to the community, as well as to many JSC employees and family members who may find themselves in need of blood during the upcoming holiday season, organizers said.

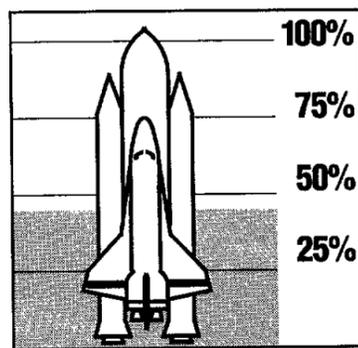
Since some donors could not donate Oct. 23 because they were participating in the Safety and Total Health Day Fun Run, pro-

gram coordinators made special arrangements with St. Luke's to allow donations on the day before and the day after the Fun Run. The added convenience was a factor in the drives big turnout.

For one of JSC's most frequent donors, Gary Kane of the Mission Operations Directorate, this drive marked his 100th donation. St. Luke's presented Kane with a special plaque in honor of the event. Kane has given more than 10 gallons of blood since he began participating in the program.

"I started donating blood in 1971 here at JSC," Kane said.

"The thing that got me involved was the realization that, until an artificial substitute can be utilized for blood, donors are an absolute necessity for the health and well being of the community."



1996 GOAL: \$460,000



Veteran commander Gibson retires this month

NASA astronaut Robert L. "Hoot" Gibson will leave NASA in mid-November to pursue private business interests.

"While I am looking forward to new challenges and opportunities, I will certainly miss being a part of the NASA team," Gibson said. "I am grateful for the opportunity to work with so many talented and dedicated people over the past 18 years."

"Selected as an astronaut in 1978, the retired Navy captain first flew as pilot on STS-41B in 1984. He subsequently commanded four shuttle missions, STS-61C in January 1986, STS-27 in December 1988, STS-47 in September 1992 and the first shuttle/Mir docking mission, STS-71, in June-July 1995.



Gibson

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

- Dickens on the Strand:** Dec. 7 and 8. Tickets cost \$6.50.
- Disney's World on Ice "Pocohontas":** Matinee starts at noon, Nov. 30. Tickets cost \$14.
- EAA Christmas dinner/dance:** The EAA Christmas dinner dance will be at 7:30 p.m. Dec. 14 at the Gilruth. Tickets cost \$25 per person.
- EAA Spring Break Special to Rome:** March 8-15, \$1,099 double occupancy. \$200 deposit required. Final payment due Jan. 8.
- Texas Renaissance Festival:** Weekends through Nov. 17. Tickets cost \$11.50 for adults and \$5.25 for children 5-12.
- Fall concert:** Tickets are now on sale for the Bay Area Chorus performance at 8 p.m. Nov. 15 at the UHCL Bayou Auditorium. Cost is \$10 for adults and \$5 for students and seniors.
- EAA Belize Resort Trip:** Available through Dec. 15. Cost is \$472 per person double occupancy. \$100 deposit required with final payment due 30 days before departure.
- Sam Houston Race Park Track Pack:** \$10 value pack for \$5.25, includes Club Level seating, program, tip sheet, admission, preferred parking and gift shop discount.
- Space Center Houston:** Adult \$8.75; children (4-11) \$6.25, annual membership \$25.95, family membership (up to four) \$59.95.
- Movie discounts:** General Cinema, \$4.75; AMC Theater, \$4.50; Sony Loew's Theater, \$4.75.
- Franklin Planner refills:** now taking orders for 1997 calendars.
- Sweetwater Pecans:** \$5.65 per pound. Orders should be placed by Nov. 8 for the Nov. 18 delivery, or Nov. 29 for the Dec. 5 delivery.
- Stamps:** Book of 20, \$6.40.
- Entertainment '97 books:** Cost is \$25.
- Metro tickets:** Passes, books and single tickets available.

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Gilruth Center News

- EAA badges:** Dependents and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Cost is \$5. Dependents must be between 16 and 23 years old.
- Hatha Yoga:** A stress relieving, stretching and breathing exercise routine to unite body, mind and spirit.
- Nutrition intervention program:** A six-week program to learn more about the role diet and nutrition plays in health, including lectures, private consultations with a dietitian and blood analysis. Program is open to all employees, contractors and spouses. For more information call Tammie Shaw at x32980.
- Defensive driving:** One-day course is offered once a month. Pre-registration required. Cost is \$25.
- Stamp club:** Meets at 7 p.m. every second and fourth Monday in Rm. 216.
- Weight safety:** Required course for employees wishing to use the weight room will be offered from 8-9:30 p.m. Nov. 19. Pre-registration is required. Cost is \$5.
- Exercise:** Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.
- Aikido:** Martial arts class meets from 5:15-6:15 p.m. Tuesday and Wednesday. Cost is \$35 per month. New classes begin the first of each month.
- Aerobics:** Classes meet every Monday, Tuesday and Thursday.
- Ballroom dancing:** Cost is \$60 per couple. For additional information call the Gilruth Center at x33345.
- Country and Western dancing:** Beginner class meets 7-8:30 p.m. Monday. Advance class meets 8:30-10 p.m. Monday. Cost is \$20 per couple.
- Fitness program:** Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information call Larry Wier at x30301.

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Dates & Data

Today

Reservations due: The Clear Lake/NASA chapter of the Professional Secretaries International will meet at 5:30 p.m. Nov. 13 at the Holiday Inn on NASA Road 1. Walter Beck will discuss "Humor to Control Stress: Learn, Laugh and Exceed Our Expectations." Reservations are due by 5 p.m. Nov. 8. For details and to make reservations contact Juanita Woodfox at 286-3346.

Cafeteria menu: Special: tuna noodle casserole. Total Health: broiled chicken breast. Entrees: deviled crabs, broiled pollock, liver and onions, broiled chicken with peach half, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, cauliflower au gratin, steamed rice, vegetable sticks.

Monday

Cafeteria menu: Special: Italian cutlet. Total Health: herb flavored steamed pollock. Entrees: barbecue beef spare ribs, steamed pollock, baked chicken. French dip sandwich. Soup: black bean and rice. Vegetables: California mix, okra and tomatoes, vegetable sticks, ranch style beans.

Tuesday

ABWA meets: The American Business Women's Association, Clear Lake Area Chapter will hold a Christmas auction to benefit the chapter's scholarship fund at 5:30 p.m. Nov. 12 the Gilruth Center. Justice of the Peace Steve Phelps will serve as auctioneer. Cost is \$11 and includes dinner and auction. Reservations are required. For details and to make reservations call Rachael Jenkins at 480-7802.

BAAC meets: The Bay Area Aero Club will meet at 7 p.m. Nov. 12 at the Houston Gulf Airport in League City. For more information call Jerry Adair at x38058.

Cafeteria menu: Special: spaghetti with meatballs. Total Health: baked potato. Entrees: stir fry beef, liver and onions, beef cannelloni, ham steak French dip sandwich. Soup: split pea. Vegetables: winter blend mix, seasoned cabbage, breaded squash, lima beans.

Wednesday

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. Nov. 13 at the House of Prayer Lutheran Church. For more information call Jeannette Kirinich x45752.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. Nov. 13 at United Space Alliance in the Civic Room at 600 Gemini. For more information call Pat Blackwell at 282-4302 or Ben Black 282-4166.

MAES meets: The Society of Mexican American Engineers and Scientists will meet at 11:30 a.m. Nov. 13 in the Bldg. 3 Cafeteria executive dining room. For details call Michael Ruiz at x38169.

NMA class: The Texas Gulf Coast Council of National Management Association is hosting a 10-hour money management seminar from 6-9 p.m. Nov. 13 at 2400 NASA Road 1. Cost is \$50 per couple for members and \$75 per couple for nonmembers. For more information call Richard Hergert at 280-0444.

Astronomy seminar: The JSC Astronomy Seminar will meet at noon Nov. 13 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information call Al Jackson at x35037.

Cafeteria menu: Special: smoked barbecue link. Total Health: roast pork loin. Entrees: cheese enchiladas, roast pork and dressing, baked chicken, steamed pollock, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green

beans, Spanish rice, turnip greens, peas and carrots.

Thursday

Airplane club meets: The Radio Control Airplane Club will hold its annual auction at 7:30 p.m. Nov. 14 at the Clear Lake Park Community Bldg. For details call Bill Langdoc at x35970.

Cafeteria menu: Special: chicken fried steak. Total Health: roast beef with gravy. Entrees: steamed pollock, lasagna with meat, steamed pollock, catfish, French dip sandwich. Soup: cream of turkey. Vegetables: whole green beans, butter squash, cut corn, black-eyed peas.

Friday

Concert: The Bay Area Chorus presents "Music of the Ages" at 8 p.m. Nov. 15 at UHCL Bayou Auditorium. Tickets cost \$10 for adults and \$5 for students and seniors and are available at the Bldg. 11 Exchange Store. For more information call the Bay Area Chorus Hotline at 684-6030.

Reservations due: Citizens of the Clear Lake Area are holding a "Clear Lake Pioneer Reunion" at 6 p.m. Nov. 23 at the Clear Lake Golf Club. Cost is \$30 per person. Reservations are due by Nov. 15. For details call Shirley Safer at 488-6260 or Gloria Goldstein at 286-8882.

Cafeteria menu: Special: fried chicken. Total Health: vegetable lasagna. Entrees: pollock hollandaise, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots vichy, Italian zucchini, breaded okra.

Nov. 20

Scuba club meets: The Lunafins will meet at 7:30 p.m. Nov. 20 at Redfish Restaurant under the Kemah/Seabrook Bridge, Seabrook Side. For details call Fred Toole at x33201.

Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP2, or deliver them to the deposite box outside Rm. 181 in Bldg. 2. No phone or fax ads accepted.

Property

- Sale/Lease:** University Trace condo, 2-2.5, dining room, 2 covered parking, W/D, new refrig, \$675 mo or \$47.9k. 280-0991.
- Sale/Rent:** Boat slip on clear Lake w/roof and motorized boat hoist for pwr boats, \$7.5k. 474-4922.
- Rent:** Taylorcrest, Baywind townhouse, 2-2.5, FPL, W/D, refrig, deck, \$625 mo + dep. 244-2036.
- Rent:** Baywind condo, 2-2, ceiling fans, W/D conn, \$550 mo. avail 12/01/96. x47326 or 486-9673.
- Sale:** 40 prime acres, house, barn, all amenities, 15 mi East of Tyler, \$120k. 488-5058.
- Lease:** Middlebrook, 3-2-2, formal, fenced, fans, garage door opener, good cond, \$925 mo + dep. 486-8551.
- Sale:** Friendswood Imperial Estates II, custom brick, 2 story, 3,250 sq ft, 4-3-3, formal living/dining room, family room w/FPL, game room, .6 ac wooded lot, owner, reduced \$175k neg. 482-1535.
- Sale:** Bay forest, custom home, energy efficient, 3BDR, den, living/dining room, wet bar, island kitchen, pool, by owner, \$299.9k. 488-3468.
- Sale:** Scenic 7+ ac homesite located in the Texas hill country, 1/4 mi from LBJ between Marble Falls and Kingsland. Linda Waters, 480-9882.
- Rent:** Sterling Knoll, 4-2-2, 1850 sq ft, cul-de-sac, \$850 mo. x33574 or 486-8963.
- Rent:** Beach house, Crystal Beach, TX, Galveston County, sleeps 10, furn, ocean view, weekly/wknd. 486-1888.
- Rent:** Beach house, West Galveston, Jamaica beach, 2nd row on beach, all amenities, sleeps 7, winter rates. 488-6796.
- Rent:** South Lake Tahoe cabin, sleeps 8, cable TV/CNR, microwave, 3-2, modern kitchen, W/D, \$85 nightly except Xmas holidays. x41065 or 326-2866.
- Rent:** Arkansas cottage overlooking Blue Mountain Lake and Mount Magazine, furn, massive FPL, antiques, views, \$50/dly or \$250/wkly. Corcoran, x47806 or 334-7531.

Cars & Trucks

- '70 Mercedes 280 SL, auto, A/C, both tops, black/tan, restored, records, ex cond, \$19k. 326-3313.
- '94 Honda Accord LX, ex cond, 27k mi, 4 cyl, white exterior, tan cloth inter, auto, 4 dr, ABS,

dual airbags, pwr, A/C, AM/FM/cass/CD, \$15.5k obo. Gus, x33425 or 286-3402.

'88 Ford Crown Victoria LX, fully loaded, white exterior/gray inter, velour seats, 70k mi, ex cond, \$4k. Speier, 333-2263.

'91 Honda Civic, 4 dr, white/navy inter, very good cond, clean, 38k mi. 554-5492.

'83 Toyota Supra, dark blue, 134k mi, good cond, ex work car, \$3.6k obo. 333-6390 or 286-2983.

'88 Plymouth Gr. Voyager, all options, include rear air, 99k mi, \$4.5k obo. x47326 or 486-9673.

'91 BMW 318 IS, white, 2 dr, 5 spd, blue/black inter, very nice, \$7.5k. Alan, 282-3398 or 333-5120.

'89 Chevy Astro Van GS, all options, upgrade Capt. chairs, radio/cass, ex mechanical cond, \$5.4k. 283-4192 or 534-4215.

'93 Ford Aerostar XLT van, Eddie Bauer inter, ex cond, 73k mi, \$10.5k. Donna, x30261 or 334-5082.

'94 Honda Accord, almost totally loaded, \$16.5k. 484-1779.

'94 Isuzu/Rodeo, 4 dr, V6, ex cond, 15k mi, AM/FM/cass, A/C, anti-theft system, running boards, \$15.5k. Madhu, x42419 or 488-5929.

'83 Volks Rabbit GTI, new struts/shocks/brakes and tires, A/C, 5 spd, good cond, \$1,850. Rob, x33484.

'89 Pontiac Sunbird, 4 dr, auto, very cold A/C, ex cond, new tires, \$2,495. Ayub Khan, x39199 or 910-6700.

'94 B-2300 PU, A/C, AM/FM, 5 spd, 23.5k mi, \$6.5k. Ray, 332-3243.

'92 Camaro Z-28 25th anniversary series, T-tops, loaded, CD player, V8, 74k mi. \$9.3k. 331-6344.

'94 Pontiac Grand AM GT, 22k mi, V6, P/W and P/L. CD, dark metallic green, ex cond, \$11.9k. 282-3503 or 480-2188.

'92 Ford Taurus LX, 4 dr, auto, pwr, 1 owner, \$7.9k. 334-3066.

'84 Honda CRX, 5 spd, radio, no A/C, runs good but body shows age, \$1.6k obo. x40077 or 996-0462.

'84 Buick Le Sabre Ltd, 92k mi, P/S and P/W, velour seats, rebuilt transmission, new headliner, new tires, \$2k. Sandra, 333-2273.

'76 Ford 2000 Diesel tractor, \$4,950; '80 Ford 340A Diesel tractor, \$5.5k. 997-2280.

Boats & Planes

'93 Crownline 19'6" bowrider, Merc V8, loaded, custom cover, Shorelander custom trailer, \$13.9k. Don, x38039 or 333-1751.

'89 Bayliner w/trailer, 16'10", I/O, 2.3L Cobra engine, \$5k. 334-3066.

Two '90 Yamaha Waverunner WR 500's w/galv trailer and accessories, \$3.5k for package. 244-7188 or 334-3961.

Coronado sailboat, 23', A/C, head, sleeps 3, \$1.5k. x55560 or 474-5455.

Cycles

'88/'89 ATK 250 motor-cross dirt bike, ex

cond, w/racing enhancements, \$5k obo. 992-1552.

'93 Yamaha YZ 250, \$2.2k. 244-7188 or 334-3961.

'89 Yamaha WR 250, \$1.3k. 244-7188 or 334-3961.

'85 Suzuki 700 Madura, V4, low mi, good cond, \$1.2k. 326-3313.

Audio Visual & Computers

Apple SE w/Radius screen attached, works great, MS Word Software, \$100. x55560 or 474-5455.

Canon "StarWriter" word processor, portable w/DOS Conversion program. x34221 or 338-1248.

Printer, Cannon PW1080A dot matrix, ribbons, manual, \$25. 996-5835.

Sony XR U220 w/10 CD changer + 3-10CD disc cartridge, detachable face plate, \$250 obo. x31057.

486 DX4/120 MHz computer, 14.4 fax/modem, 8Mb RAM, 120Mb HD, 14" monitor, MS DOS 3.1 and Windows S/W preloaded, \$650; HP 500C color printer w/cartridges, \$100, computer and printer, \$725. Fran, 281-282-5266 or 281-997-7338.

Sony Playstation games, Ridge Racer, \$15; Battle Arena Toshinden, \$15; Wipeout, \$15; Alien Trilogy, \$20; ex cond, all 4/\$50. Doug or Elaine, 332-5790.

PowerMac 6116CD, 4x CD ROM, 500 Mb HD, floppy drive, 14" color monitor w/built-in speakers, system 7.5 and other S/W, Apple color printer, \$1.2k. x33434 or 333-5266.

Audiovox car phone, model SP85. mounts in car. \$25. 332-2039.

Pioneer KEH-M7500 car radio/cass deck, detachable face, CD changer controls, many features, \$150; Pioneer CDX-M30 CD 6 disc changer, w/FM modulator, \$200 or \$300 for both w/o modulator. Lisa, x40213 or 992-7302.

Telephone systems, 1 twelve line NEC system w/transceiver and 12 phone sets, \$950; 2 stand alone Panasonic phones, w/answering system and built-in speaker, \$70; 10-channel auto-scan cordless 16 station auto dialer, \$60. x32920 or 610-9282.

Musical Instruments

King Thrombone, \$225. x33137 or 334-2533.

Bundy Flute, ex cond. Ann, 554-4248.

Pets & Livestock

Mini-Rex rabbits, \$10 ea. 482-0874.

AKC yellow Lab puppies, 9/23, available 10/27, will have shots and wormed, \$300. x48123 or 409-925-7869.

Sable Ferret, extremely gentle, \$75. x55560 or 474-5455.

Household

G.E. refrig, 18.7 cu ft, good cond, \$300; contemporary living room set w/center table, ex cond, \$550. x38879 or 332-1991.

Bedroom set, \$350; 2 living room sets w/tables, \$400/\$200; 2 dining room sets, \$150/\$50; W/D \$300/\$150; refrigerator, \$200. 471-0511.

Dresser, 6 drawer, \$30 obo; living room chair, \$30 obo. Lisa, x40213 or 992-7302.

Velour loveseat and ottoman, nice, \$50. Alan, 282-3398 or 333-5120.

King size waterbed w/bookcase headboard, extra storage drawers and matching dresser, \$425; glass-top coffee table w/2 end tables, \$75; metal desk, \$25. x35376 or 943-3842.

Black simulated wood entertainment center, accommodates 25" TV, \$75; 2 glass top black end tables, \$15 ea; black floor lamp, \$15; wooden dart board cabinet, \$10; wooden storage box for 18 video tapes, storage for 24 CDs, \$5. Sharyl, x41168 or 334-5862.

Large couch, maroon w/green, ex cond, \$150; oak entertainment center, large/sturdy, stereo space w/glass doors, CD organizer, shelf space, ex cond, \$150. Steve, x33500.

Round oak dining room table, 4 dining chairs; dishwasher. 486-1888.

Antique bathtub, white, 5', \$500. Ann, 544-4248.

Brass queen size headboard, ex cond, \$40. x36090 or 488-7427.

Waterford Crystal Lismore pattern, 7 liqueur, \$20 ea; 6 sherry, \$22 ea; 6 wine, \$24 ea; 6 goblets, \$28 ea. 480-2188.

Wanted

Want roommate, 3-2-2, Pasadena, smoker OK, \$350 mo. Tamela, x36155 or 998-8859.

Want non-smoking female to share 4-2 home, Clear Lake, no children or pets, \$300 mo + 1/3 util. Karen, 480-3324.

Want 1 roommate, non-smoking to share 4-2 home in Friendswood, cable, W/D, microwave, VCR, gas grill and all household privileges, \$250 mo, no dep, all bills pd. Michael, x38169 or 482-8496.

Want free or inexpensive microwave and refrigerator for branch office on site. x36127.

Want Champion Juicer. 474-4922.

Want current or outdated AAA travel books for TX, OK, and KS. Dennis, x31733 or 486-5546.

Want 16mm camera and projector, or 35mm movie camera. Michael, x38169 or 482-8496.

Want pilots operating handbook for 1977 Warrior II. Gary, 992-9925.

Want guitar and amp, electric. 482-0874.

Want 380 gun or 38 special. 482-0874.

Want to buy your VHS camcorder for under \$100. x31883.

Want low priced school/work car or truck, prefer Japanese. 271-7011.

Miscellaneous

Backyard swing set, slide, swings and jungle gym, \$25. x49649 or 486-5808.

Aquarium, Oceanic, 55 gal w/stand, 2 filter systems, gravel, cover light, fresh water only, ex cond, \$500 obo. Betty, x37242 or 332-3724.

Trailer axle/ hubs/springs/wheels, tires/ shifter-Hurst Q-stick. Bobby Iven, x38823 or 337-4134.

Lawn edger, Trim Rite, 3Hp, \$50; Craftsman chipper-shedder, \$275. 482-1535.

Soliflex, good cond, \$500 obo. Soo, 480-5027.

Men's ski jacket, Columbia 3-way w/zip out liner, sz med, \$35. 335-1451.

Baby carriers, Snugli, \$15; Century, \$10; Braun electric shaver, \$20; tablesaw blade, \$25; 2 ton hydraulic floor jack \$70; other misc items. 333-6390 or 286-2983.

Golf clubs, ladies, left hand Spalding full set, include putter, bag, \$150 obo. 280-2388.

Two giant Boston Ferns, \$12.50 ea. x48640 or 332-9720.

Quality children's clothes, girls, 0-12 mos; boys 12 mos-2T, Gymboree, Oshkosh and others, boys toys; Soaker hoses, various lengths, at 1k ft make offer. x32567 or 488-3314.

Bodytech home gym, ex cond, 4 stations, dual stack, \$599 obo. 482-9576.

Filing cabinets, \$10-\$40; desk, \$50; 2 vacuum pumps, \$175 ea; 100 bottle wine rack \$50; 5Hp rear tine tiller, ex cond, \$295. 997-2280.

Fiberglass camper shell for Isuzu short bed pickup, ex cond, \$450. Rick, x36499 or 388-0427.

Compressor, ex cond, \$350 obo; 4Hp 20 gal w/hoses, charge air, Pro. Mike, x34823 or 474-5252.

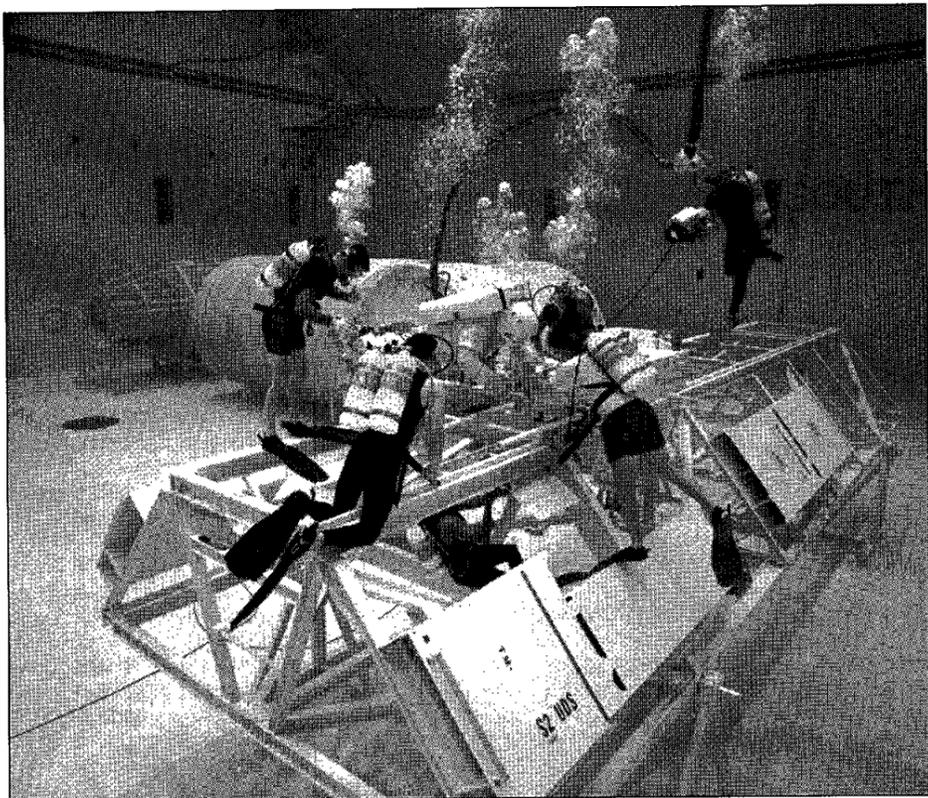
Red 5Hp Kawasaki go-cart for off road, \$400; Valspan soccer shoes, sz 10, \$45; Georgetown starter jacket, adult sm, \$40; Pro skateboard, \$20. x33137 or 334-2533.

Seasoned oak firewood, \$45 for half cord, can deliver, neg. Robert, 286-5406.

Scuba equipment, 1 pr sm gloves, \$20; 2 pr fins, \$25/\$10; 1 sm hood, \$25; 1 Hawaiian sling hand spear, \$50; wood aquarium stand w/door, good cond, \$40. 480-3424.

MARES wetsuit, men's med, 3mm, full body, zipper on back, \$90 obo; DACOR booties, men's sz 9, women's sz 6, \$15 ea obo; Neoprene weight belt, men's, \$20 obo. Jeri, 333-7552.

Body By Jake, 15 exercises, video, \$75. x31057.



Industry Inspection

JSC opens its doors to business leaders for up-close look

Wednesday and Thursday, corporate and technical representatives from businesses that aren't usually associated with aerospace will be at JSC to gain a better understanding of the technologies involved in accomplishing human space flights and the possibilities for applying them to their tasks.

The NASA JSC Inspection will offer more than 100 exhibits and mini-tours of facilities around JSC. Business leaders will have the opportunity to examine technology in engineering and science operations, attend overview sessions about NASA's programs and talk directly with the scientists, engineers and technicians who are making them happen.

"This event will be an excellent opportunity to show our technical advances and allow our engineers, scientists and managers to share our activities and accomplishments," said JSC Director George Abbey. "During their time here, the leaders will discover that much of the work we do - ranging from spacecraft design to on-orbit operations, to biomedical research - has potential applications in the commercial sector."

Representatives from chemical, petroleum, energy, transportation, agriculture, manufacturing, medical and engineering fields will be welcomed with a brief orientation in Bldg. 9. From there, these business leaders will be free to explore the center and its variety of science, technical and engineering capabilities.

"We've really worked hard to come up with an approach that would give attendees a great deal of flexibility in planning their own time at JSC based on their individual interests," said Bob Holkan, chairman of the planning committee. "We have an outstanding program that allows our guests to choose from exhibits and tours from across the center. They'll not only have a chance to discover possible benefits and partnerships, but they'll learn quite a bit about our program, as well."

An overview of JSC's major programs and technology developments in Bldg. 9 North is of prime interest to managers from companies like Honeywell in California and chemical manufacturer M.W. Kellogg in Houston. Business representatives will learn about a meteorite that may harbor evidence of primitive life on Mars, get a broad look at JSC's Technology Transfer and Commercialization activities and learn how to do business with

NASA. There also will be mock-up tours and demonstrations of robotic and virtual reality equipment under development.

Astronaut and flight control team training will be examined in Bldg. 5, including a tour of the space shuttle and space station training facilities and demonstrations of a robotics prototype trainer and virtual environment training techniques.

Senior vice presidents of companies like Operational Technologies, an environmental service company in San Antonio, and Monsanto of Alvin will tour Bldg. 7 and its advanced life support equipment. These top managers will have a chance to learn about air and water purification along with the Electronic Cuff Checklist for space walkers and advances in plant growth and artificial soils development.

Manufacturing technology has attracted CEOs and directors from companies across the country like MAC Equipment in Missouri. These business leaders will learn about rapid prototyping and manufacturing systems in Bldg. 9 South, along with a miniature manufacturing laboratory and fracture control analysis tools.

Structures and thermal technologies that use radiometers to measure heat distribution inside a furnace will be demonstrated in Bldg. 13, and visitors will have an opportunity to do some hands-on tests with systems designed to isolate experiments from vibration.

John Saiz, a thermal control system designer in Engineering's Structures and Mechanics Division, will explain the benefits of a new Thermal Synthesizer System, developed by JSC and Lockheed. The system is designed to help engineers design control systems for space flight hardware, but could be applied to any process or system where temperatures need to be controlled. A version of the software that could be used on personal comput-

ers, and therefore potentially useful in the computer and petrochemical industries, should be available in December, he said.

Communications and microwave technologies may be explored in Bldg. 14. Demonstrations will show how NASA measures particle flow velocities, identifies fluid flows, tests antennas and compresses video and data streams.

Additional engineering initiatives have attracted the attention of top managers from companies like Shell Oil, Baker-Hughes and

Exxon. These initiatives, such as computer-aided human factors analysis, automatic cable analyzers, energy systems testing and the NASA/DeBaakey Heart Pump Project will be on display in Bldg. 15.

Aerospace flight simulation technology and techniques will be chronicled in Bldg. 16, where computational

fluid dynamics analysis tools, trajectory and motion modeling tools, secure software development and Global Positioning System applications will be demonstrated and displayed.

Trajectory and Motion Modeling Tools such as those employed by JSC's Flight Mechanics Lab, which performs analysis, simulation and animation of general motion and trajectories for any and all phases of space flight, could be useful in many other industries, said Chris Cerimele, deputy chief Advanced Mission Design, who worked with Pete Cuthbert and Dick Ramsell in preparing the display.

With onset of smaller, more powerful computers and the development of graphical user interfaces, he said, it is easier today to go from simulation output to animation.

"The use of animation has streamlined our process and made products a lot more understandable to our own engineers, and to management and the public," Cerimele said. "In the past, data came in plots or lists of num-

bers. With animation and quick turnaround, you can readily visualize what is happening and then change control, guidance systems."

"I think there are applications out there other than in the aerospace industry and hopefully we'll key in on those," Cerimele said. He suggested that such technology might be useful in developing training tools that could show pilots the best way to dock in the Houston ship channel, or by lawyers recreating accidents through animation to present a clear picture to judges and juries.

Medical sciences research and development will be shared in Bldg. 37. Included in the demonstrations will be an ear plug that can measure heart rate, pulse pressure and respiration, a thermoelectric test tube chiller, a drug microencapsulation system and telemedicine equipment and techniques.

Mission operations and control systems will be explained in Bldg. 30. Visitors will get a look at the original and the new MCC, learn about electronic documentation, intelligent flight activities planning and the Information Sharing Protocol that allows NASA to efficiently disseminate data to a variety of locations.

Both the Weightless Environment Training Facility in Bldg. 29 and the Sonny Carter Training Facility's Neutral Buoyancy Laboratory will be open to visitors interested in neutral buoyancy operations. Other space environment simulations, such as thermal-vacuum chambers and optical information storage will be showcased in Bldg. 32.

Space sciences advancements in the area of earth observations and orbital debris tracking and protection will be demonstrated in Bldg. 31.

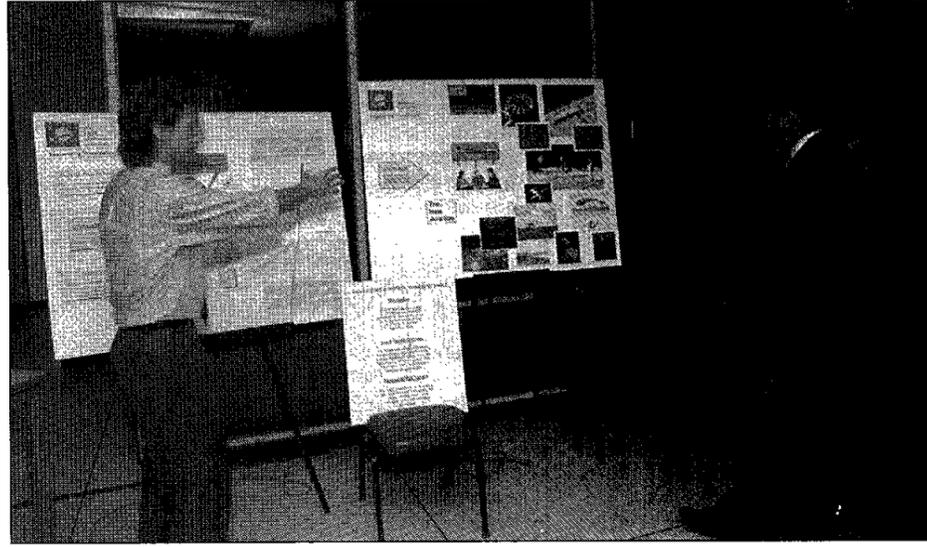
In Bldg. 49, JSC's use of vibration and acoustic testing equipment will be explored.

In addition, JSC's T-38 and Shuttle Training Aircraft will be available for inspection as well as the reduced gravity and high altitude programs and avionics upgrades on the T-38.

JSC employees may invite technical and business associates at local technical businesses who can benefit from participation in the NASA/JSC Inspection. While it is preferable to register in advance by faxing the visitor's name, company position and phone number to 280-8927, visitors may register at the event. For more information regarding the event, contact the Inspection Office at x47853. □

'This event will be an excellent opportunity to show our technical advances and allow our engineers, scientists and managers to share our activities and accomplishments.'

—JSC Director George Abbey.



Top: JSC's new Neutral Buoyancy Facility at the Sonny Carter Training Facility will be one of the area's available for tours during NASA JSC Inspection. Above left: John Saiz, a thermal control system designer in Engineering's Structures and Mechanics Division, explains the Thermal Synthesizer System during a walk-through of Bldg. 13 by JSC Director George Abbey and Associate Director John Young. The system, developed by JSC and Lockheed to help control temperatures in flight hardware, will suggest ways

that non-aerospace industries could use the software in their work. Above right: Chris Cerimele, deputy chief of Engineering's Advanced Mission Design Branch, explains Trajectory and Motion Modeling Tools developed by the Flight Mechanics Lab. The system, developed to provide quick-turnaround animations based on simulation data, could be useful to a number of other industries.

JSC Photos by Robert Markowitz

Cooke accepts exploration job

Doug Cooke has been selected to fill the new position of deputy manager for Exploration in the Advanced Development Office of the Engineering Directorate.

Cooke also will have a dual assignment as manager of the Exploration Project Office. In this role, Cooke will develop and oversee JSC's Lunar and Mars activities. Cooke has been with NASA for more than 23 years. He currently serves as the deputy manager, technical, in the International Space Station Program Office and formerly served as the manager of the Vehicle Office. Prior to joining the SSPO, Cooke held progressively responsible managerial positions in the shuttle and New Initiatives program offices.

Greene takes on space station duties

Jay Greene will move to the International Space Station Program Office where he will serve as deputy manager for technical concerns.

Greene, who currently serves as the man-

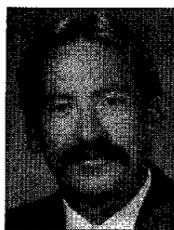
ager, Space Shuttle Vehicle Engineering in the Space Shuttle Program, has been with NASA for more than 31 years. He served as the manager of the Orbiter Projects Office; assistant to the director of Engineering; deputy manager of the Space Shuttle Program; chief of the Safety Division; and space shuttle flight director, as well as the deputy associate administrator for Exploration at NASA Headquarters.

Secretaries earn top honors

Two secretaries recently earned the Marilyn J. Bocking Award for Secretarial Excellence.

Patricia Teale of the Earth Science and Solar System Exploration Division was recognized for her ability to support a wide range of responsibilities. As a secretary who supports a division that has constant contact with the public through visitation programs, Teale has been instrumental in continuing a dialogue with visitors and providing them with information.

To aid in this effort, Teale recently designed and prepared an "Information Guide for



Cooke



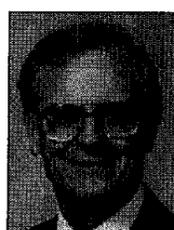
Greene



Broadfoot



Teale



McAllum

Visitors to the Earth Science and Solar System Exploration Division," which provides information and contacts at JSC.

Joan Broadfoot of the Flight Systems Safety and Mission Assurance Division was recognized for her consistent and organizational abilities and administrative skills.

In addition to handling a high volume of correspondence flowing into the division from the space shuttle and space station program offices, Broadfoot has set up systems to simplify the filing of important documents.

Long-time NASA employee dies

Former JSC employee William McAllum died earlier this month of cancer at the age of 63 after more than 30 years of service in the space program.

McAllum began his NASA career in 1962 in

the Space Physics Division, working on various projects ranging from Apollo to the International Space Station. Some of those projects include work on the Apollo lunar surface experiments, the Large Area Crop Inventory experiment, developing satellite remote sensing techniques for estimates of world-wide crop production, development of human life sciences flight experiment systems for Spacelab and the initial planning for research on the space station.

After retiring from JSC in 1987, McAllum continued to work for General Electric, McDonnell Douglas and Lockheed Martin until his final retirement in 1995.

Donations may be made to the Jean McAllum Memorial Fund at the JSC Federal Credit Union. Proceeds will be donated to the children's ward at M.D. Anderson Hospital.

Galileo zips by Callisto's cratered face

This week, NASA's Galileo spacecraft flew closer to Jupiter's moon Callisto and its crater-studded surface than any spacecraft has ever come to the outermost of the four big moons orbiting Jupiter.

Data from this flyby and another one next June should help resolve questions about why this seemingly inactive, pockmarked moon is so different from its vastly more active siblings. Its aged appearance is its most distinctive known feature, the oldest, most cratered face of any body yet seen in the solar system.

"With data from this encounter, we'll know more about why Callisto is so different from Jupiter's more lively moons," said Galileo Project Scientist Torrence Johnson of NASA's Jet Propulsion Laboratory.

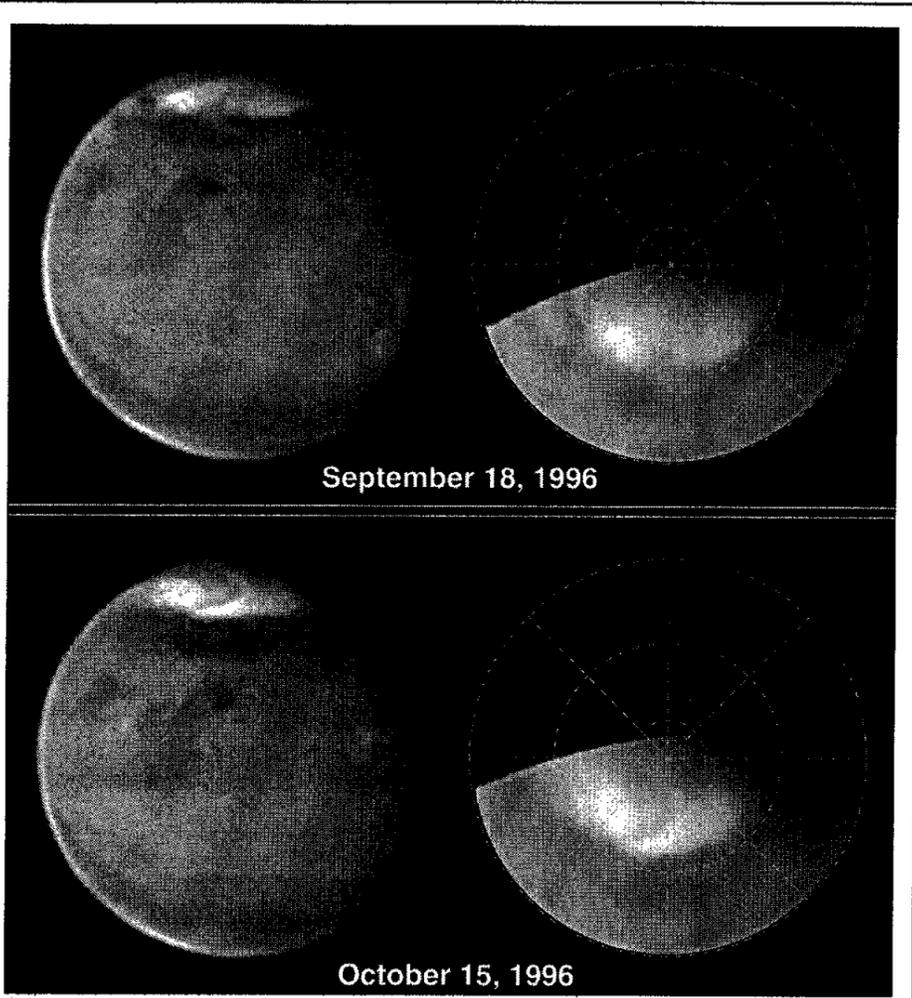
The Callisto flyby marks the start of a new telecommunications capability created to maximize the amount of data that can be received from Galileo. The giant antennas that listen to NASA's exploratory robots in deep space have been augmented with the inauguration of a new link between the agency's Deep Space Network telecommunications stations in California and Australia and Australia's Parkes radio astronomy antenna.

Galileo was launched by the crew of STS-34 in October 1989.

EAA offers spring excursion to Rome

The Employee Activities Association is offering a seven-day trip to Rome, Italy, this coming spring.

The trip, set for March 8-15, includes round-trip airfare, six nights hotel accommodations, continental breakfast daily, airport transfers and a half day sightseeing tour of Rome. Cost is \$1,099 per person, double occupancy. A \$200 deposit is required to confirm space with final payment due Jan. 8. Deposits may be taken to the Bldg. 11 Exchange Store or mailed to VIP Supertravel at 6300 West Loop South, Suite 360, Bellaire, Texas 77401. For details call Dick McMinimy at x34037.



September 18, 1996

October 15, 1996

Two Hubble Space Telescope images of Mars, taken Sept. 18 and Oct. 15, reveal a state-sized dust storm churning near the edge of the Martian north polar cap. Nothing quite like this feature has been seen previously either in ground-based or spacecraft observation. Top: a salmon colored notch in the white north polar cap is a 600-mile long storm. Bottom: though the storm has dissipated by October, a distinctive dust-colored comma-shaped feature can be seen curving across the ice cap.

Hubble spots huge Mars storm

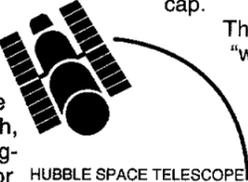
New Hubble Space Telescope images of Mars reveal a Texas-sized dust storm churning near the edge of the Martian north polar cap.

The polar storm probably is a consequence of large temperature differences between the polar ice and the dark regions to the south, which are heated by the spring-time Sun. Mars is famous for large, planet-wide dust storms.

Smaller storms resembling the one seen here were observed in other regions by

Viking orbiters in the late 1970s. However, this is the first time that such an event has been caught near the receding north polar cap.

This kind of advanced planetary "weather report" will be invaluable for aiding preparation for the landing of NASA's Pathfinder spacecraft in July 1997 and the arrival of Mars Global Surveyor orbiter in September 1997. The MGS orbiter began its journey Wednesday, and the Mars Pathfinder is scheduled for launch Dec. 2.



HUBBLE SPACE TELESCOPE

Health Benefits, Thrift Savings seasons open

The annual governmentwide "open season" for both the Federal Employees Health Benefits Program and the Thrift Savings Program begin this fall.

FEHB open season begins Monday and extends through Dec. 9, while the TSP open season begins next Friday and extends through Jan. 31.

During the open month, civil servants may change from one FEHB health plan to another; change between "self only" and "family" enrollment; or enroll in a health plan even if they had declined enrollment.

Additional information will be available at JSC's annual Health Benefits Fair from 9 a.m.-2:30 p.m. Dec. 4 at the Gilruth Center.

Employees may make a change or enroll either by submitting an SF 2809, Health Benefits Registration Form, to AHZ/Employee Services or by calling Employee Express, a new, 24-hour automated phone system at 1-800-571-3453. Open Season changes, enrollments and plan coverage will be effective Jan. 5.

During TSP open season, eligible employees may begin contributions to the plan; change the amount of their contributions; change the allocation of their contributions; or stop their current contributions.

To sign up, make changes, or stop contributions employees must either complete a TSP election form (TSP-1) and submit it to AHZ/ Employee Services or use Employee Express. The effective date depends upon when changes are submitted. If a change/enrollment is received by Jan. 4, the effective date will be Jan. 5; by Jan. 18, the effective date will be Jan. 19; by Jan. 31, effective by Feb. 2.

For investment guides, forms or more information about either the FEHB or TSP programs, call or visit Employee Services in Bldg. 45, Rm 140, x32681.

Canadian joins STS-85 crew as payload specialist

Canadian Space Agency Astronaut Bjarni Tryggvason will join the crew of STS-85 for Discovery's 11-day mission to study changes in the Earth's atmosphere, scheduled for launch in July 1997.

Tryggvason will serve as a payload specialist to support the Canadian-sponsored Microgravity Vibration Isolation Mount investigation. MIM is a small double-locker device designed to isolate International Space Station payloads and experiments from disturbances created by jet firings or crew activity. The rest of the STS-85 crew, Commander Curt Brown, Pilot Jeffrey Ashby and Mission Specialists Jan Davis, Robert Curbeam and Stephen Robinson, was assigned in September.



Tryggvason

Next Mir crew members train in Star City

(Continued from Page 1)

The Americans in line to follow John Blaha to the Mir space station are all in training at the Gagarin Cosmonaut Training Center in Star City, Russia. Astronaut Jerry Linenger has spent time in the altitude chamber training in the Russian Orlan spacesuit this week, and space walk training in the Russian reduced gravity aircraft. Mike Foale also participated in the altitude chamber training, and received instruction on Mir's communication

systems and the Spektr and Priroda modules. Astronauts Wendy Lawrence, Dave Wolf, and Jim Voss have all been spending time in intensive Russian language training, but also had time to taste a variety of Russian foods that will be available for inclusion in their on-orbit diet.

Recently joining them all in Star City were Commander Charlie Precourt and the crew of STS-84, who were there for a week-long training session. Precourt and his crew, who are slated to ferry Foale

to Mir next May and come home with Linenger, started simulator training on their rendezvous and docking, working with Mir 23 Commander Vasily Tsibliev and Flight Engineer Alexander Lazutkin.

This week, Commander Bob Cabana and his STS-88 crewmembers, who will undertake the first International Space Station assembly flight in December of next year, also arrived in Russia to watch the first integrated systems testing of the functional cargo block.

Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

Editor Kelly Humphries
Managing Editor Karen Schmidt
Associate Editor Natasha Calder

Mars Global Surveyor holds for weather

(Continued from Page 1)

of minerals and their distribution. After its survey mission is complete, the spacecraft will be used as a data relay station for signals from other spacecraft that will land on Mars.

The launch will mark the next step in Mars exploration which is to obtain an overview of the entire planet. Surveyor will be followed by Russia's Mars '96 mission Nov. 16, and by NASA's Mars Pathfinder Dec. 2.